

### Supercorrection Form

Name:

#6a Convince me that you now understand the concept. Make connections and build on the problem if possible; be sure to explain the error(s) that you made.

Original 2/4 Supercorrection 0/4

Here I did a simple miscalculation when I was looking for the quarter of the period ( $\frac{\pi}{2}$ ). I was looking for this because that is by how much the sine graph is shifted left from the cosine graph. So  $\frac{1}{4} \times \frac{\pi}{2} = \frac{\pi}{2 \times 4} = \frac{\pi}{8}$  and not  $\frac{\pi}{4}$  (which is a quarter of  $P_1$ ).

Correct solution:

$$y = 5 \cos \left( 4x - \frac{11\pi}{8} \right) + 1$$

cosine graph/equation

$\frac{1}{4}$  period \*      \* period =  $\frac{2\pi}{4}$  ← (b)  
period =  $\frac{\pi}{2}$   
↖ 2 solutions.

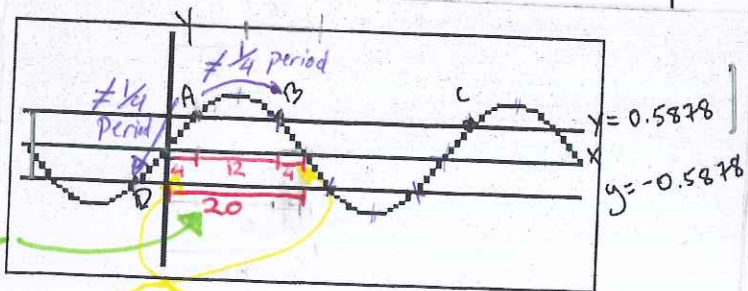
Another solution to the problem could simply be:  $y = 5 \sin(4x + \frac{\pi}{2}) + 1$

Did you check these on your calculator (for the s.c.'s)?  
Try it.

# 4 Convince me that you now understand the concept. Make connections and build on the problem if possible; be sure to explain the error(s) that you made.  
Original 2/4 Supercorrection 4/4

After having calculated the period I assumed that  $A \rightarrow B$  was a quarter of the period as it looked like a quarter on the diagram. \* This visual assumption is a BIG mistake in any mathematical question (which implies by its name, that there is a mathematical solution and not a visual one.). So in the future, when dealing with sinuoidal curves I will make sure to not be lured into visual assumptions on any graph.

After making this assumption I also used it to find  $D$  as I also thought  $A \rightarrow D$  was equal to ~~1~~ a period.



Correct solution:

period = 40  $\therefore \frac{1}{2}$  period = 20 = distance from the Origin to the first positive  $x$ -intercept of the curve.

Also because A was four units to the right of the origin, due to symmetry, B is four units to the left of the first positive  $x$ -intercept.

From this information a simple subtraction ( $20 - 4 - 4 = 12$ ) tells us that  $A \rightarrow B$  is 12. So to find the point B (which is on  $y = 0.5878$ ) you add 12 to A's  $x$ -coordinate:  $4 + 12 = 16 \therefore B = (16, 0.5878)$

Also using symmetry it is apparent that D is the same distance, from the origin, as A only to the left. Therefore (because D is in the negative quadrant) D's point is:  $(-4, -0.5878)$

